



ASM Aerospace Specification Metals Inc.



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## AISI Type 321 Stainless Steel, annealed bar

**Subcategory:** Ferrous Metal; Metal; Stainless Steel; T 300 Series Stainless Steel

Component	Wt. %	Component	Wt. %	Component	Wt. %
C	0.08	Mn	2	S	0.03
Cr	17	Ni	11	Si	1
Fe	69	P	0.045	Ti	0.15

### Material Notes:

Similar to Type 304 except Ti content helps prevent chromium carbide precipitation resulting from welding or elevated temperatures. Stabilized at annealing temperatures between 950-1010°C (1750-1850°F). Resists scaling and vibration fatigue. Applications include aircraft exhaust stacks and manifolds, chemical processing equipment, weld equipment, jet engine parts.

Physical Properties	Metric	English	Comments
Density	<u>8 g/cc</u>	0.289 lb/in <sup>3</sup>	

### Mechanical Properties

Hardness, Brinell	150	150	
Hardness, Knoop	170	170	Converted from Brinell hardness.
Hardness, Rockwell B	80	80	
Hardness, Vickers	157	157	Converted from Brinell hardness.
Tensile Strength, Ultimate	<u>585 MPa</u>	84800 psi	
Tensile Strength, Yield	<u>240 MPa</u>	34800 psi	
Elongation at Break	<u>55 %</u>	55 %	in 50 mm
Modulus of Elasticity	193 - 200 GPa	28000 - 29000 ksi	
Charpy Impact	<u>165 J</u>	122 ft-lb	V-notch
Izod Impact	<u>135 J</u>	99.6 ft-lb	

### Electrical Properties

Electrical Resistivity	<u>7.2e-005 ohm-cm</u>	7.2e-005 ohm-cm	at 20°C
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Magnetic Permeability	1.008	1.008	at RT
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### Thermal Properties

CTE, linear 20°C	<u>16.7 μm/m-°C</u>	9.28 μin/in-°F	0 - 100°C
CTE, linear 250°C	<u>17.1 μm/m-°C</u>	9.5 μin/in-°F	at 0-315°C (32-600°F)
CTE, linear 500°C	<u>18.5 μm/m-°C</u>	10.3 μin/in-°F	0 - 540°C
CTE, linear 1000°C	<u>20.5 μm/m-°C</u>	11.4 μin/in-°F	20 - 925°C
Specific Heat Capacity	<u>0.5 J/g-°C</u>	0.12 BTU/lb-°F	from 0-100°C (32-212°F)
Thermal Conductivity at Elevated Temperature	<u>16.1 W/m-K</u>	112 BTU-in/hr-ft <sup>2</sup> -°F	100°C
Melting Point	1400 - 1425 °C	2550 - 2600 °F	
Solidus	<u>1400 °C</u>	2550 °F	
Liquidus	<u>1425 °C</u>	2600 °F	
Maximum Service Temperature, Air	<u>870 °C</u>	1600 °F	Intermittent Service
Maximum Service Temperature, Air	<u>925 °C</u>	1700 °F	Continuous Service

### References for this datasheet.

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.